

13585 N.E. Whitaker Way • Portland, OR 97230 Phone (503)255-5050 • Fax (503)255-0505 www.horlzonengineering.com

Project No. 4288

## SOURCE EVALUATION REPORT

## Clearwater Paper Corporation Lewiston, Idaho

VOC Leak Checking
No. 1 and No. 2 PR Washers

Marchael Carachae and October 27, 2011

Test Site:
Clearwater Paper Corporation
803 Mill Road
Lewiston, Idaho 83501

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## 1. CERTIFICATIONS

## 1.1 Test Team Leader

I hereby certify that the test detailed in this report, to the best of my knowledge, was accomplished in conformance with applicable rules and good practices. The results submitted herein are accurate and true to the best of my knowledge.

Name: Matt Busch	
Signature	Date 12-12-11
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## 1.2 Report Reviewer

I hereby certify that I have reviewed this report and find it to be true and accurate, and in conformance with applicable rules and good practices, to the best of my knowledge.

Name: David Baç	gwell, QSTI	RYP (OVE)	4. jiganas) i	
Signature <u></u>	SIL	- J	Date <u>(</u>	2/15/11
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			woo (gaya)	
			i Sank a (1998) Herri Royak	

## 2. INTRODUCTION

2.1 Test Site:

Clearwater Paper Corporation

803 Mill Road

Lewiston, Idaho 83501

2.2 Mailing Address:

P.O. Box 1126

Lewiston, Idaho 83501

2.3 Test Log:

Positive Pressure Leak Checking

PR Washers No. 1 & 2

**Test Date** 

Run No.

**Test Time** 

October 27, 2011

1

15:21-15:26

2.4 Test Purpose: Testing was done for internal informational purposes

## 2.5 Participants:

ৰাৰ্ভি/Horizon Personnel:আইণ্ডেল্ড ৰানুন্ত পতাৰ্থ উচ্চত চাৰ্মান্তৰ নুচ নিজ প্ৰবাহন ন

Matt Busch, Team Leader and Report Review

David Bagwell, QSTI, Report Review

Christopher D. Lovett, QSTI, Technical Writer

Test Arranged & Observed by:

Rick Wilkinson, Clearwater Paper Corporation

### 3. SUMMARY OF RESULTS

### 3.1 Leak Definition:

- Detectable leak concentration: 500 ppmv (as methane) above background
- Reference Subpart: 40 CFR 63, Subpart S, 63.450(c) and 63.457(d)

## 3.2 Summary of Results

A single check on each component in the two PR Washer systems was completed. No detectable leaks as defined in the applicable subpart were found at any location.

## 3.3 Quality Control / Quality Assurance Procedures

QA procedures outlined in the test method were followed, including equipment specifications and operation, calibrations, and performance tolerances. EPA Method 21 details the following:

- Instrument Specifications standards (Sections 6.1 to 6.6)
- Calibration Precision (Section 8.1.2)
- Response Time (Section 8.1.3).

The record of the Calibration Precision and Response Time are on the Analyzer Field Data sheet. Specifications of the instrument used and the results of specific checks are summarized in Tables 1a and 1b.

## Table 1a

		EPA Method 21	Instrument Specificatio	ns
Applicab	le Method		Equipment	Meets
Section	Requirem	ents	Specification	Requirements
6.1	Detector T	ype:	Thermo Electron T\	/A 1000B Yes
			Portable Flame Ioni	zation
	bns (b)98	e va je rekodila ga	Detector	
6.2	Measurem	ent capabilities with	nin 0.5 to 10,000 ppm (	CH <sub>4</sub> – Yes
	specified ra	anges for leak	dynamic range	veganoravita Suik
	definition o	oncentration:	0.5 to 50,000 ppm (	CH <sub>4</sub> –
		Had <b>aaVa M</b> A bay sa	linear range	Again aigne A
6.3		meter readable to		
	2.5% of sp	ecified leak definition	on 1.8 ppm CH₄	eck of a side way and assume
	concentrat	ion (=12.5 ppm CH.	a):	· · · · · · · · · · · · · · · · · · ·
6.4	Electrically	driven pump:	Ham to <b>ek ein</b> outbookkon k	ewafewaria Ag <b>Yes</b>
6.4	Nominal sa		notenácy logi a střezáko edi e <mark>1.0 L/min</mark> aczteká /24	
6.5	Probe or P Diameter:	robe Extension Ou	ter ≤ 0.25 inches	Yes
6.6	한 경우 경우 기계를 받아 나는 사람들이 되었다.	Atmosphere Safety ons:		Groups A, Yes
		ng et werde <sup>r</sup> retige	stasianasie eso estrentinost Table 1b	owys he elises :
5		Calibration Prec	ision and Response Ti	me
Ca	libration Gas	Concentration	<b>Calibration Precision</b>	Avg. Response Time
Zer	o Gas	0.0 ppmv CH₄	NA	10 seconds

0.30%

10 seconds

502 ppmv CH<sub>4</sub>

Span Gas

### 4. SOURCE DESCRIPTION AND OPERATION

## 4.1 Process and Control Device Description and Operation:

The brown pulp is washed to remove the spent pulping liquors and dissolved solids from the pulp. Some of this liquor is recycled to the digesters while the major portion is sent to the Recovery Area. The weak black liquor is washed from the pulp at the pre-oxygen washers and all brownstock washer system gases are collected in a high-volume low-concentration (HVLC) system and thermally oxidized.

## 5. SAMPLING AND ANALYTICAL PROCEDURES

## 5.1 Sampling Procedures

## 5.1.1 Sampling and Analytical Methods

**Test Methods Used:** Testing was done in accordance with EPA Method 21 in 40 CFR 60, Appendix A, July 1, 2007. The regulations that specify this are incorporated in 40 CFR 63, Subpart S, July 1, 2007: 63.450 Standards, paragraph (c), 63.453 Monitoring requirements, paragraph (k)(3) and 63.457 Test methods and procedures, paragraph (d).

The portable flame ionization detector (FID) was calibrated in the field according to the manufacturers' specifications using 502 ppmv methane gas. Instrument zero was done using bottled zero air gas.

## **5.2 Horizon Test Equipment**

**Equipment Name** 

Identification

Portable FID

Thermo Electron TVA 1000B (FID)

Portable Flame Ionization Detector

## 6. DISCUSSION

The results of the testing should be valid in all respects. All quality assurance checks including instrument checks and calibrations were within method-allowable tolerances.

## **APPENDIX**

## Field Data

Analyzer Calibration Worksheet
Calibration Precision Worksheet
VOC Leak Check & Analyzer Field Data



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Client	Clearwater Paper
Name:	The state of the s
Job #:_	4288
Date:_	10-27-11
Source	HVLC
Method	

Initial Calibration:	Gas Type	Cyl. Value	Insti	r. Respo	onse	Res	ponse	Time
High Cal: 26931	(H 4	502	501	495	503	10	10	10
Zero Cal: 5121	A:r'	< 1	4.11	0.16	0.09	ાં	10	10
Time:	13:5	2						
Final Calibration:	Gas Type	Cyl. Value	Insti	r. Resp	onse	Res	ponse	Time
High Cal: 2693	CHY	502	505	501	498	t to	10	10
Zero Cal: 5121	Air	<1	1.11	1.21	1.34	(0	10	16
Time:	16:2	<b>.</b> 6						
							time must s to reach	be less than 90%.

Calibration Precision (high cal): (((Instr. Response-Cyl. Value) +(Instr. Response-Cyl. Value) + (Instr. Response-Cyl. Value)) + Cyl. Value) × 100

Calibration precision must be equal to or less than 10% of the cal gas value. <u>Time</u> **Background** ppm ' Sample Point

criteria = 10%	0.30	www.company.com.com.com.com.com.com.com.com.com.com
Cal Precision, % 0.46	Cal Precision, % 0.13	
Average Cal Pre 2.3 1.5	Average Cal Pre 0.7 1.2	
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501 495 1 7 4.11 0.16 4.11 0.16	505 -3 1.11 1.21 1.11	
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Clearwater Paper 10/27/2011 Calibration Precision		



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Clearwater 4288	Name_/ Date	Natt Busch	. 12 A	
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Page 5 of 6

10/27/2011

#'s 1+2 PR washer

Start = 15:21

Stop = 15:26

No values | Detection > 500 ppm

# Process Data Process and Operation Data

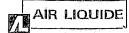
## No. 1 and No. 2 PR Washers

Date/Start Time: Date/ Stop Time: 10/27/2011 15:21 10/27/2011 15:26

27-Oct-11 15:21:00 27-Oct-11 15:22:00 27-Oct-11 15:23:00	11967,22	1 PR Washer (RPM) SIC5550.PV 1.84 1.84 1.79	2 PR Washer (RPM) SIC5560.PV 1.19 1.11 1.21	Area 15 Production Rate (ODTP/Day) FYI7890.PV 463.98 463.96 463.95	
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## Calibration Information Calibration Gas Certificates





A-8

500 WEAVER PARK RD

Shipped LONGMONT

CO 80501

From:

Phone: 888-253-1635

Fax: 303-772-7673

CERTIFICATE OF ANALYSIS

HORIZON ENGINEERING

DOCUMENT#:41390850 -001

13585 N.E. WHITAKER WAY

PORTLAND OR 97230

US

PO#: 1336 ITEM #: T100-105

DATE: 05Apr2011

FILL PRESSURE: 1000 PSIG PRODUCT EXPIRATION: 04Apr2013 SCOTT LOT#: LOT080000833

PURE MATERIAL: AIR

CAS# 132259-10-0

GRADE:

ZERO AIR

PURITY: -

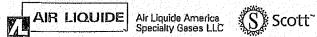
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MANUFACTURED DATE: 05Apr2011 SCOTTY SIZE: 105

ANALYST:

WAYNE JOHNSON





500 WEAVER PARK RD

Shipped LONGMONT CO 80501 From: Phone: 888-253-1635

Fax: 303-772-7673

CERTIFICATE OF ANALYSIS

HORIZON ENGINEERING

DOCUMENT#:41390850 -003

13585 N.E. WHITAKER WAY

PORTLAND OR 97230

PO#: 1336 ITEM #: T263-105

DATE: 06Apr2011

FILL PRESSURE: 1000 PSIG PRODUCT EXPIRATION: 05Apr2013 SCOTT LOT#: L0T080000831

REQUESTED GAS ANALYSIS
CONC MOLES (MOLES

(MOLES) 502. PP PPM

BALANCE

COMPONENT METHANE AIR

500. PPM BALANCE

CGA C-10

MANUFACTURED DATE: 06Apr2011 SCOTTY SIZE: 105

ANALYST:

WAYNE JOHNSON

## QA/QC Documentation Portable FID Instrument Specifications

## TVA1000B Technical Specifications

Safety certifications FM (Class 1, Div. 1, Groups A,B,C&D Hazardous Location, Temp. Class T4)

CENELEC (Div. 1, Zones I and II Group IIC, Hazardous Location, Temp. Class T4)\*

Datalogging Onboard

Readout Bar graph & 4- digit LCD

Dynamic Range 0.5-2,000 ppm (PID) isobutylene; 0.5-50,000 ppm (FID) methane

Linear Range 0.5-500 ppm (PID) isobutylene; 0.5-10,000 ppm (FID) methane

Response Time 3.5 seconds

Minimum Detectable 10% 100 ppb benzene (PID); 300 ppb hexane (FID) Limits (FID) (FID

Alarms Low, high, STEL

Sample Flow Rate 1,000 cc/min nominal

Power Rechargeable NiCd Battery

Power Rechargeable NiCd Battery

Logging Capacity 800-18,000 points mode specific

Temperature Range 0-40°C (32°F - 104°F)

Fuel None required (PID); 99.995% hydrogen (FID)

Portable Operation 8 hours (with reference operating conditions)
Time

Approximate Mass 5.8 kg (13 pounds)

Nominal Dimensions 13.5 x 10.3 x 3.2 inches (343 x 262 x 81 mm)

Analog Output (apprendig to 0-2V dos uposperiores que nativa en la sentra en la delización de significación de la sentra en la delización de la delización delización de la delización deliza

Repeatability +/- 1% (PID); +/- 2% (FID)

Autoranging Yes

Diagnostics Yes

Other Available Options:

Carrying Case P/N CR012XL
Charcoal Filter P/N 510095-1
FID Calibration Kit P/N CR009UY
PID/FID Calibration Kit P/N CR012UH

\* Enhanced probe and DataManager not CENELEC certified as of publication date

A world leader in high-tech instruments, Thermo Electron Corporation helps life science, laboratory, and industrial customers advance scientific knowledge, enable drug discovery, improve manufacturing processes, and protect people and the environment with instruments, scientific equipment and integrated software solutions.

Based in Waltham, Massachusetts, Thermo Electron has revenues of more than \$2 billion, and employs approximately 11,000 people in 30 countries worldwide. For more information, visit www.thermo.com/ih



Environmental Instruments

27 Forge Parkway

Franklin, MA 02038

First Responder / Industrial Hygiene Products The TVA1000B is the only over-the-shoulder portable vapor analyzer that offers both PID (Photo Ionization Detection) and FID (Flame Ionization Detection) in a single, easy-to-use instrument. The ability to utilize both technologies in this field proven Instrument provides benefits in reduced weight and a single user interface. The user can easily monitor and log inorganic and organic vapors simultaneously.

### FID Detection

Users can measure a wide variety of organic vapors over an impressive dynamic range (0-50,000 ppm), monitoring some compounds that the PID will not detect. The flame lonization detector operates by breaking hydrocarbon bonds and is not limited by the ionization potential of the molecule.

#### Simultaneous FID/PID Detection

No other instrument offers both Photo lonization and Flame lonization Detection operating simultaneously in a single portable vapor analyzer. Dual detection eliminates the time, expense and trouble of purchasing and maintaining two separate analyzers.

With PID detection, the user has not only the ability to monitor for organic compounds, but also can detect many inorganic compounds. Some compounds detected by PID and not FID are ammonia, carbon disulfide, carbon tetrachloride, formaldehyde, and hydrogen sulfide. The PID also has the advan-

tage of not requiring fuel or air to operate. In anaerobic environments, the TVA1000B PID can be used.

#### **Applications**

Fugitive Emissions Monitoring
The unique dual detector FID/PID
design can handle a wide range of
compound vapors present at processing plants. The TVA1000B will
permit monitoring at lower ppm levels.

Emergency Response
For reliable measurements of hazardous spills or emissions, the
TVA1000B responds quickly in an
emergency. The ability to quickly
detect the presence of "hot spots"
is key to locating the source of the

Hazardous Waste Site Evaluation The TVA1000B allows quick and easy identification of the hazard location and quantifies the level of contamination.

Underground Storage Tanks
The TVA1000B is a primary tool for
determining if a UST is leaking and
the extent of the contamination.

## Industrial Hygiene

The TVA1000B can help you maximize the effectiveness of your plant ventilation system, and identifies trouble spots. Use it to survey ambient vapor levels in specific breathing zones or in general plant environments, and log for further follow-up action.

Natural Gas Leak Detection The TVA1000B enables quick and easy detection of natural gas leaks.

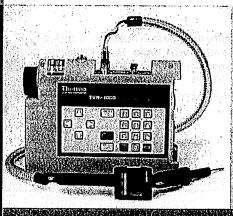
#### Key Features

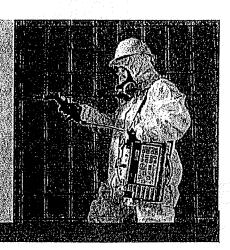
- Simultaneous FID/PID or Single FID detector(s)
- · Portable and lightweight
- Multiple response factors and curves
- Multi-point calibration
- On-board datalogging
- 8 hour battery life

## Probe Options

- Standard Probe
   Display measurement values on a 4-character LCD, with measurement units displayed on %, ppm, or ppb. Additionally, a ber graph indicator provides an indication of concentration level. Function keys allow selection of analyzer
- functions. Enhanced Probe Originally designed for Fugitive Emissions monitoring, the enhanced probe has a larger display area than the basic probe. This provides a display of up to 6 lines x 20 characters, plus a double height concentration value. It displays all the same information as the standard probe and has menu-driven access to many of the analyzer functions, allowing them to be easily initiated and/or changed at the probe.







## TVA1000B Data Manager Accessory: Route Management Probe

Powerful field capabilities
The TVA1000B Data Manager
allows users to modify or create
route data in the field, eliminating
the need for manual recording of
data. This helps you comply with
the electronic data storage requirements within most consent
decrees. The new probe has a
highly visible 360 degree LED with
a pulsed rate linked to concentration.

The DataManager provides access to all of the features previously available only through the sidepack. Users can also easily search and navigate between tags in a route by simply entering the desired tag identifier.

#### Flexibility and control

The DataManager allows control of how data is viewed and accessed in the field. This allows the user to customize the view to best meet the monitoring needs at your facility, as each route may have different fields and screen displays. Fields may be designated as non-editable to enhance data integrity and database security.

An optional comment field allows the user to make electronic notes about each tag monitored. An alpha-numeric keypad makes data entry a snap.

## Key Features for the DataManager

- Custom field labels for more clearly identified route information
- Definable screen layouts optimize user efficiency
- Pick lists lead to consistent data entry and minimize chance of data entry errors
- One button selections to access most commonly used functions
- New sample probe provides 360 degree visual indicator of concentration level
- Cable management system eliminates snagging sample line and electronic cable
- Existing TVA1000 units may be upgraded
- Enhanced filtering system removes dirt and water more efficiently.

### ThermoConnect Software

ThermoConnect enables users of the TVA1000B to transfer, display, analyze, and configure data from the instrument using a computer. ThermoConnect is windows based and facilitates the importing of data into other Windows based applications making it easier to retrieve logged data.

Added capability to maximize the TVA DataManager's features

ThermoConnect has been updated with a powerful new utility to create new route database template files. This utility allows you to easily build your own route database and design the screen appearance through a four-step process. Also, any existing route files in the old file format are still recognized by the TVA and may be upgraded to the new format.



The TVA 1000B is a benchmark for experience and reliability in Fugitive Emissions Monitoring